

We claim:

1. A propylene copolymer composition comprising

- 5 A) a propylene copolymer containing from 1 to 20% by weight of olefins other than propylene and
- B) at least one propylene copolymer containing from 5 to 98% by weight of olefins other than propylene,

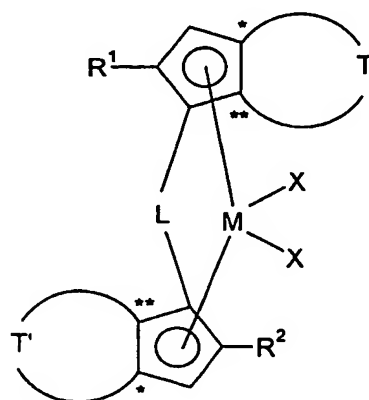
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where the propylene copolymer composition is obtainable by means of a two-stage or multistage polymerization using a catalyst system based on metallocene compounds which is used in both stages.

15 2. A propylene copolymer composition as claimed in claim 1 which has a number average molar mass M_n in the range from 50,000 g/mol to 500,000 g/mol.

3. A propylene copolymer composition as claimed in claim 1 or 2, wherein the catalyst system comprises at least one metallocene compound of the formula (I),

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(I)

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where

M is zirconium, hafnium or titanium,

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X are identical or different and are each, independently of one another, hydrogen or halogen or an -R, -OR, -OSO₂CF₃, -OCOR, -SR, -NR₂ or -PR₂ group, where R is linear or branched C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl which may be substituted by one or more C₁-C₁₀-alkyl radicals, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl or C₇-C₂₀-arylalkyl

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and may contain one or more heteroatoms of groups 13-17 of the Periodic Table of the Elements or one or more unsaturated bonds, where the two radicals X may also be joined to one another,

5 L is a divalent bridging group selected from the group consisting of C₁-C₂₀-alkylidene radicals, C₃-C₂₀-cycloalkylidene radicals, C₆-C₂₀-arylidene radicals, C₇-C₂₀-alkylarylidene radicals and C₇-C₂₀-arylalkylidene radicals, which may contain heteroatoms of groups 13-17 of the Periodic Table of the Elements, or a silylidene group having up to 5 silicon atoms, e.g. -SiMe₂- or -SiPh₂-,

10 R¹ is linear or branched C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl which may be substituted by one or more C₁-C₁₀-alkyl radicals, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl or C₇-C₂₀-arylalkyl and may contain one or more heteroatoms of groups 13-17 of the Periodic Table of the Elements or one or more unsaturated bonds,
15 where R¹ is preferably a linear or branched C₁-C₁₀-alkyl group which is unbranched in the α position, in particular a linear C₁-C₄-alkyl group such as methyl, ethyl, n-propyl or n-butyl,

20 R² is a group of the formula -C(R³)₂R⁴, where

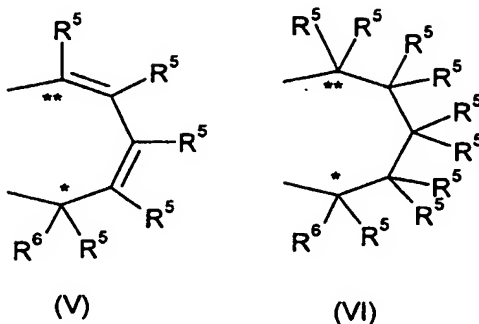
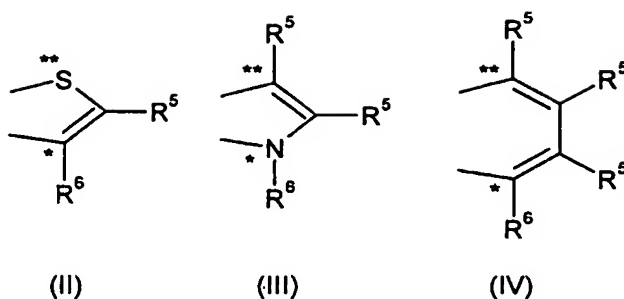
 R³ are identical or different and are each, independently of one another, linear or branched C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl which may be substituted by one or more C₁-C₁₀-alkyl radicals, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl or C₇-C₂₀-arylalkyl and may contain one or more heteroatoms of groups 13-17 of the Periodic Table of the Elements or one or more unsaturated bonds, or two radicals R³ may be joined to form a saturated or unsaturated C₃-C₂₀-ring,
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 R⁴ is hydrogen or linear or branched C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl which may be substituted by one or more C₁-C₁₀-alkyl radicals, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl or C₇-C₂₀-arylalkyl and may contain one or more heteroatoms of groups 13-17 of the Periodic Table of the Elements or one or more unsaturated bonds,
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T and T' are divalent groups of the formulae (II), (III), (IV), (V) or (VI),

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where

the atoms denoted by the symbols * and ** are joined to the atoms of the compound of the formula (I) which are denoted by the same symbol, and

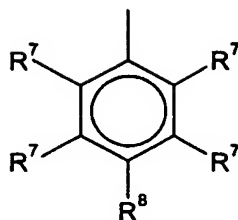
R^5 are identical or different and are each, independently of one another, hydrogen or halogen or linear or branched C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl which may be substituted by one or more C_1 - C_{10} -alkyl radicals, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl or C_7 - C_{20} -arylalkyl and may contain one or more heteroatoms of groups 13-17 of the Periodic Table of the Elements or one or more unsaturated bonds,

R^6 are identical or different and are each, independently of one another, halogen or a linear or branched C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl which may be substituted by one or more C_1 - C_{10} -alkyl radicals, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl or C_7 - C_{20} -arylalkyl and may contain one or more heteroatoms of groups 13-17 of the Periodic Table of the Elements or one or more unsaturated bonds.

4. A propylene copolymer composition as claimed in claim 3, wherein

R^6 is an aryl group of the formula (VII),

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(VII)

where

R⁷ are identical or different and are each, independently of one another, hydrogen or halogen or linear or branched C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl which may be substituted by one or more C₁-C₁₀-alkyl radicals, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl or C₇-C₂₀-arylalkyl and may contain one or more heteroatoms of groups 13-17 of the Periodic Table of the Elements or one or more unsaturated bonds, or two radicals R⁷ may be joined to form a saturated or unsaturated C₃-C₂₀ ring,

R⁸ is hydrogen or halogen or linear or branched C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl which may be substituted by one or more C₁-C₁₀-alkyl radicals, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl or C₇-C₂₀-arylalkyl and may contain one or more heteroatoms of groups 13-17 of the Periodic Table of the Elements or one or more unsaturated bonds.

5. A propylene copolymer composition as claimed in claim 4, wherein

R⁸ is a branched alkyl group of the formula -C(R⁹)₃, where

R⁹ are identical or different and are each, independently of one another, a linear or branched C₁-C₆-alkyl group or two or three radicals R⁹ are joined to form one or more ring systems.

6. A propylene copolymer composition as claimed in any of claims 1 to 5, wherein

R¹ is unbranched in the α position.

7. A propylene copolymer composition as claimed in any of claims 1 to 6, wherein the olefin other than propylene is exclusively ethylene.

8. A propylene copolymer composition as claimed in any of claims 1 to 7, wherein the weight ratio of propylene copolymer A to propylene copolymer B is in the range from 90:10 to 80:20.

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9. A propylene copolymer composition as claimed in any of claims 1 to 8, comprising from 0.1 to 1% by weight, based on the total weight of the propylene copolymer composition, of a nucleating agent.
- 5 10. A propylene copolymer composition as claimed in any of claims 1 to 9, wherein the glass transition temperature of the propylene copolymer B determined by means of DMTA (dynamic mechanical thermal analysis) is in the range from -20°C to -40°C .
11. A propylene copolymer composition as claimed in any of claims 1 to 10, wherein the molar mass distribution M_w/M_n is in the range from 1.5 to 3.5.
- 10 12. A propylene copolymer composition comprising
- 15 A) a propylene copolymer containing from 1 to 20% by weight of olefins other than propylene and
- B) at least one propylene copolymer containing from 5 to 98% by weight of olefins other than propylene,
- 20 where the propylene copolymer A and the propylene copolymer B are present as separate phases and the proportion of n-hexane-soluble material is $\leq 2.6\%$ by weight.
13. A propylene copolymer composition comprising
- 25 A) a propylene copolymer containing from 1 to 20% by weight of olefins other than propylene and
- B) at least one propylene copolymer containing from 5 to 98% by weight of olefins other than propylene,
- 30 where the propylene copolymer A and the propylene copolymer B are present as separate phases and
- the propylene copolymer composition has a haze value of $\leq 30\%$ and the tensile E modulus is in the range from 100 to 1500 MPa.
- 35 14. A process for preparing propylene copolymer compositions as claimed in any of claims 1 to 11, wherein a two-stage polymerization is carried out and a catalyst system based on metallocene compounds is used.

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15. The use of a propylene copolymer composition as claimed in any of claims 1 to 13 for producing fibers, films or moldings.
16. A fiber, film or molding comprising a propylene copolymer composition as claimed in any of claims 1 to 13, preferably as substantial component.

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